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ABSTRACT

In the study of students' achievement behavior, it has been argued that learning goals that emphasize self-improvement rather than outperforming others are more desirable. This study examined how students' learning goal orientations were related to their theories of intelligence (e.g., whether intelligence is inborn). The subjects were 400 Chinese seventh graders in Hong Kong. Preliminary factor analyses revealed that students' theories of intelligence were multidimensional. In addition, students with stronger learning goals were more likely to believe that intelligence was malleable and task-specific. Implications for cross-cultural and developmental studies are discussed. (Contains 2 tables and 26 references.) (Author/SLD)

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Achievement Goal Orientations and Theories of Intelligence of Chinese Students in Hong Kong

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Achievement Goal Orientations and Theories of Intelligence of Chinese Students in Hong Kong

Abstract

In the study of students' achievement behaviour, it has been argued that learning goals which emphasized self-improvement rather than outperforming others are more desirable. The present study examined how students' learning goal orientation was related to their theories of intelligence (e.g., whether intelligence is inborn). The subjects were 400 Grade 7 Chinese students in Hong Kong. It was found that students' theories of intelligence were multidimensional. Furthermore, students with stronger learning goals believed more that intelligence was malleable and task-specific. Implications for cross-cultural and developmental studies are discussed.

Achievement Goal Orientations and Theories of Intelligence of Chinese Students in Hong Kong

It has been argued that a learning orientation which emphasizes learning and self-improvement rather than outperforming others is more desirable (e.g., Nicholls, 1989). The present study examined how this learning orientation was related to students' belief on intelligence (e.g., whether intelligence is inborn).

In the classical theories on achievement motivation, the focus has been on how people's behaviour is controlled by their internal drives (e.g., need for achievement in Freudian theories) or external reinforcers (e.g., rewards, punishments) (for a review, see Weiner, 1990). Since the 1970's, motivational behaviours have been studied by analyzing "how children construe the situation, interpret events in the situation, and process information about the situation" (Dweck, 1986, p.1040).

Such an attributional approach to achievement motivation was originated by Heider and later elaborated by Weiner (1986, 1990, 1994). The analysis on how people perceive the causes of their achievement has become a central theme of interest in many psychological and educational researches. It has been shown that the perceived causation, or the explanation for an outcome, is important and is closely related to expectancy of future success, emotional reactions, persistence in future tasks, and other social motivational behaviour (e.g., Dweck, 1986; Weary, Stanley, & Harvey, 1989; Weiner, 1986, 1994).

In an achievement event, such as a school examination, questions like "why did I succeed or fail?" or "why does Peter get a higher mark than me?" may invoke many causes. Weiner has proposed a three dimensional classification system, which consists of locus of causality (internal vs. external), controllability (controllable vs. uncontrollable), and stability (stable vs. unstable). Other dimensions, such as globality, have also been proposed, to delineate the relationships between causal attributions and other psychological constructs.

Studies with Chinese students' achievement orientation revealed cross-cultural universality as well as differences (Hau & Salili, 1989, 1990, 1991, Salili & Hau, 1994; Whang & Hancock, 1994). Traditional Chinese culture is influenced by Confucian learning which emphasized effort, endurance and hard work (Yang, 1986). Chinese students are taught to work even when the probability of success is very low. It is understandable, therefore, to find that internal and controllable causes (e.g., effort) were generally considered important among Chinese students.

Achievement Goal

Achievement goal orientation has also been suggested as an important determinant of motivation or achievement behaviour (Ames, 1992; Archer, 1994; Blumenfeld, 1992; Dweck, 1986; Elliott & Dweck, 1988; Singhal & Misra, 1994). Two contrasting goals have been identified and received substantial research interest. In one, the performance goal, individuals seek to maintain positive judgments of their own competence and avoid negative judgments by trying to prove their competence and to show superiority.

In the other one, the learning goal, individuals tend to increase their competence to understand or master new tasks. Other labels have been given to these two types of contrasting goals, such as task- vs. ego- (Nicholls, Cheung, Lauer, & Patashnick, 1989), task- vs. competitive- (Covington & Omelich, 1984), or mastery- vs. performance-orientation (Ames & Archer, 1987). However, due to the similarity and convergency in theories, the labels used with these two poles of achievement goals have been used interchangeably by researchers (Ames & Archer, 1987, 1988).

Students' adoption of a certain goal orientation is affected by situational as well as dispositional factors. Situational factors may include variables such as competitive versus individualistic structure, relaxed versus test situation, and private versus public performance, whereas, dispositional factors include personal values and other individual differences. Faced with an achievement task, some individuals would ask the question: "What will I learn?" (learning goal) whereas others would be more concerned with "Will I look smart?" (performance goal). In an achievement situation, students who are

performance oriented tend to find the right answer as rapidly as possible in order to show off their ability. It is possible that they will avoid tasks which are believed to be beyond their ability level in order not to be judged incompetent.

Performance oriented students are more concerned about how others judge their ability, whereas learning oriented ones are more eager to find the best way to increase their ability. It is understandable, therefore, that students in these two contrasting groups would be quite different in their analyses of the achievement task, which may lead to the adoption of different strategies undertaken to accomplish the task (Dweck, 1986; Dweck & Leggett, 1988).

When faced with difficult tasks, learning oriented students will consider them as challenges and use the opportunity to maximize their learning. Unattained mission would not be regarded as a failure but rather as challenges that can be overcome through more effort. On the other hand, performance oriented students see obstacles as threats to their ability. If the problems cannot be solved within a short time, they tend to switch to strategies to avoid the incompetence judgement. Tasks unsolved are seen as failure. Such worry about failure may distract students' attention in the task itself. Since most achievement tasks have some difficulties, deterrence from confronting the obstacles may ultimately limit the attainment of these performance oriented individuals (Dweck & Leggett, 1988).

Theories of Intelligence

An important dispositional factor that may affect students' achievement goal orientation is their perception and theories of intelligence (e.g., whether intelligence is inborn). These implicit theories of intelligence refer to the layperson's own analyses of intelligence (Weinberg, 1989). They are constructions that reside in people's minds.

Two contrasting theories, the entity and incremental theories, have been proposed (Dweck, 1986). Students with the former theory regard intelligence as an in-born, fixed, uncontrollable, and global trait. It cannot be easily enhanced through practice or greater effort expenditure. Students with such beliefs will also be aware that the exertion of more effort in completing the same task is an

evidence of low intelligence. On the other hand, students with incremental theory regard intelligence as malleable, increasable, and controllable. Furthermore, the exertion of effort would increase the intellectual competence of a person.

Dweck (1986) also believed that individuals with entity theory would adopt performance goal while individuals with incremental theory would be more learning oriented. In the present study, students' perception of the long term malleability (can intelligence change through effort) and universality of intelligence (is intelligence affecting a wide range of performance) are explored. It is hypothesized that students will be more learning oriented if they believe that intelligence changes with effort and affects a narrow range of performance.

METHOD

Subjects

The sample consisted of ten intact classes of Grade 7 Chinese students in Hong Kong. In this British colony which will become a special administrative region of the People's Republic of China in 1997, Chinese is commonly spoken by the majority (97%) of the local Chinese population. Our sample consisted of a total of 400 students (195 males, and 205 females) with an average age of 12.7 years. They were of average academic standard as compared to the Hong Kong student population. Most of the students were living in government housing estates and came from families of middle socioeconomic class.

Instrument

A Chinese instrument consisting of two parts was constructed. The first part measured students' achievement goal orientation and was adapted from Ames and Archer (1988). Items referring to classroom goals were rewritten as individual goals. There were 28 items and students were asked to rate each of them on 7-point scales (strongly agree to strongly disagree).

The original instrument had a distinct two-factor solution with reliability coefficient of .88 and .77 for the learning and performance scales respectively. In the learning goal dimension, students were

asked to rate items such as "I work hard because I like to learn new things', 'I like to find answers on my own', 'I want to try new things'. In the performance goal dimension, sample items included, 'I feel good when I do better than other students on a test', 'I compete with others to see who can do the best work', 'The reason I work hard is to get a high grade'.

The second part of the instrument measured students' theories of intelligence using the important elements as laid down by Dweck (1986). Eight items with 7-point rating scale were constructed. They included, 'Intelligence is inborn', "One's intellectual competence is determined by his effort level', 'Intellectual competence can never be changed by exerting more effort', 'Person with high intellectual competence can do everything better than other'.

The questionnaire with a covering page of instructions was group administered to the students. They were told that there was no right or wrong answer to all the questions and what was needed was the student's own personal opinion.

Results

Theories of Intelligence

Principal components analysis was used to reveal the structure of the items in the theories of intelligence. The eigenvalue greater than unity and the scree test criteria both revealed three factors which accounted for 58% of the total variance. An oblique rotation was adopted to allow correlation among factors.

As can be seen from Table 1, Factor 1 loaded on items concerning whether intelligence could be increased as a person grew or when effort was exerted. This factor was thus labelled as Malleability of Intelligence. Factor 2 was loaded heavily on two items which were related to the universality and globality of the effects of intelligence. In one item, it was asked whether intelligence was a global trait. In the other, students' opinion on whether intelligence was a sufficient condition for success was assessed. This factor was thus labelled as Universality of Intelligence.

Insert Table 1 about here

The third factor, Specificity of Intelligence, contained items related to whether intelligence consisted of many independent pieces of skills. The reliability coefficient of the subscales Malleability, Universality, and Specificity of Intelligence were .71, .45 and .12 respectively. In summary, the analyses revealed that students' theory of intelligence was not unidimensional, rather it consisted of a clear factorial separation of multiple factors.

Achievement Goals

A principal components analysis of the 28 achievement goal items with the scree test as criterion revealed two factors and accounted for 30% of the total variance. An oblique rotation was adopted with the correlation between the two factors being .24.

The first factor was loaded on items such as `I enjoy learning new things', `I make sure that I understand the work' and `I pay attention to whether I am improving'. These items concerned mastering new tasks, increasing one's ability , and willingness to accept challenging tasks. This factor was labelled as Learning Goals. The second factor was loaded on items that put stress on seeking positive judgement of one's ability by working hard or competing with other students. Examples of these items included `I try hard to get the highest grade', and `I compete with others to see who can do the best work'. Besides these items that sought positive judgement, some others described the tendency to avoid negative judgement, such as: `I really don't like to make mistakes' and `I worry when the work is difficult'. This factor was thus labelled as Performance Goals.

The internal consistency reliability as measured by Cronbach's alpha were .84 and .71 for learning and performance goals respectively.

Relationships between Achievement Goals and Theories of Intelligence

The intercorrelations among and between the subscales in achievement goals and theories of intelligence are shown in Table 2. For the achievement goal, it was also noted that the two orientations were positively correlated (r = .24). Students with strong learning goals also tended to be more performance oriented. For the subscales within theories of intelligence, the malleability and universality of intelligence subscales were negatively correlated (r = -.26). Students who viewed that intelligence could be changed believed that the effects of intelligence were task specific.

For the relation between achievement goals and theories of intelligence (see Table 2), the significant correlations showed that students of stronger learning goal perceived intelligence to be more malleable (r = .36) and task-specific (r = .23). In other words, students who were more concerned about mastery of new tasks were likely to regard intelligence as a changeable trait that could be increased by exerting greater effort.It was also noted that the universality dimension of theories of intelligence was related positively to performance goal (r = .17) but negatively to learning one (r = -.17). That is, students who believed intelligence to have global influence affecting different domains of performance were of stronger performance goals and weaker learning goals.

Insert Table 2 about here

Discussion and Conclusion

The main purpose of this study was to explore the relationships between achievement goals and theories of intelligence. As hypothesized, students' adoption of the learning goal was found to be related to their theories of intelligence. Those who were more concerned with learning believed that intelligence could be changed and the effects of intelligence were task specific.

Preliminary factor analyses revealed a multi-dimensional factor structure for the items in theories of intelligence. The result was in congruence with the findings of Hau, Tang, Fung and Cheung's (1990) study but contradictory to that of Dweck (1986) who suggested that theories of

intelligence were unidimensional (along the entity-incremental dimension). As exploratory factor analysis was used in the present study, future analyses using confirmatory factor analysis on various theories of intelligence instruments should be adopted to give a more definite conclusion on whether the theory of intelligence was unidimensional or not.

In the measurement of achievement goals, the two factors (learning and performance goals) as constructed by Ames and Archer (1988) were reproduced in the factor analysis. Nicholls (1989) suggested that these two goal orientations did not necessarily have to be negatively correlated. This was confirmed in the present study which showed a moderately low correlation between the two goals. These results were not surprising. High achievers could be quite concerned both in demonstrating their ability as well as learning new knowledge through the process. Thus, they could be strong in both learning and performance goals.

As regards Chinese child rearing practices, it was generally agreed that Chinese (or a lot of Asian) parents put great emphasis on endurance, effort and hard working (Yang, 1986). Irrespective of the difficulty level of the task, children were taught to do the best they could to show their effort and endurance. Furthermore, education has been very highly respected among Chinese (or a lot of Asian). Parents do whatever they can to provide the best education for their children. In return, children are expected to demonstrate their filial piety by working hard. Chinese children believe that effort can compensate the lack of ability in academic performance.

It is proposed therefore, that Chinese (or a lot of Asian) children have been brought up in environment where learning goals are strongly emphasized. Consequently, these children would also tend to have a more malleable theory of intelligence and would believe that intelligence is quite task specific. All these hypotheses will have to be further examined in future cross-cultural studies.

Stipek and Mac Iver (1989) pointed out that young students had high evaluation of their own intellectual competence. They held an undifferentiated concept of ability that ability could be easily increased through exerting greater effort. It was also shown that young students had a dominantly

intraindividual comparison and would be less affected by social comparison. To these young students, non-mastery of a difficult task would not be regarded as a failure but rather as a challenge that can be mastered later. They believe the exertion of additional effort will eventually increase their ability and subsequently bring success.

If young students use predominately intraindividual comparison as a standard for excellence, it is likely that they will have malleable theories of intelligence. However, due to cognitive maturation, children gradually become aware of the inverse relation between effort and ability -- greater effort to achieve equal performance means lower ability (Nicholls, 1989). It is possible that children will then shift to less malleable theories of intelligence. In order to maintain the more desirable learning goals within young students, classroom environment, curriculum, and achievement assessment should be so structured that the learning goal orientation can be enhanced. Thus, difficulties are seen as new challenges and opportunities for learning. Students will continue to exert their maximal effort irrespective of whether this may somehow reflect their incompetence.

In summary, the present study revealed a multidimensional structure of theories of intelligence. It was shown that students' learning achievement goal and malleable theories of intelligence were positively related. Furthermore, direction for future cross-cultural and developmental studies were also discussed.

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Table 1

Factor Loadings of Items in Theories of Intelligence

	Factor		
Item	1	2	3
Malleability of Intelligence			
2. Intelligence grows with age	.63		
3. Intelligence comes from effort	.82		
4. Effort determines intelligence	.81		
5. Exerting greater effort cannot change intelligence	-.52	.56	.30
Universality of Intelligence			
6. Intelligent people outperform others in all tasks		.72	.35
8. Intelligent people do not have to work hard		.79	
Specificity of Intelligence			
1. Intelligence is in-born	-.30		.74
7. Intelligence is composed of many skills			.53
Eigenvalue	2.74	1.36	1.07
% of variance	30.4	15.1	11.9

Note. Only loading greater than .30 are shown.

Table 2

Correlations among Subscales in Achievement Goals and Theories of Intelligence

	Achievement Goal		Theories of Intelligence	
	Learn	Perform	Malleable	Universal
	1	2	3	4
Achievement Goals				
1. Learning Goal				
2. Performance Goal	.24**			
Theories of Intelligence				
3. Malleability	.36**	.05		
4. Universality	-.17**	.17**	-.26**	
5. Specificity	.23**	.15*	-.19**	.18**

* $p<.01$, ** $p<.001$.

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